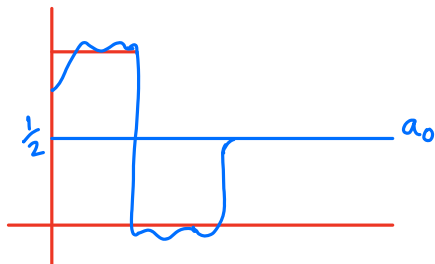$$a_0 = \frac{1}{T} \int_0^T f(t) \, dt$$

$$a_K = \frac{2}{T} \int_0^T f(t) \sin\left(\frac{2\pi K}{T} t\right) dt$$

$$b_K = \frac{2}{T} \int_0^T f(t)$$

$$C_0 = \frac{\langle f, g \rangle}{\langle g_0, g_0 \rangle}$$

$$\cos(2\pi K) - 1 \equiv (-1)^K - 1 = \begin{cases} -2, & K \text{ odd} \\ 0, & K \text{ even} \end{cases}$$

$$h_n(t) = a_0 \sum_{K=1}^{n} a_K \cos\left(\frac{2\pi \cdot K \cdot t}{T}\right) + \sum_{K=1}^{n} b_K \sin\left(\frac{2\pi \cdot K}{T} t\right)$$

Fourier Transform

$$C(\omega) = \int_{-\infty}^{\infty} f(t) e^{-i2\pi \omega t} \, dt, \quad \omega \in (-\infty, \infty)$$

$$f(t) = \int_{-\infty}^{\infty} C(\omega) e^{i2\pi \omega t} \, d\omega, \quad t \in (-\infty, \infty)$$